

Transfusion Camp 2021-2022

Day 2: Seminar 2B, November 19, 2021

“Delayed or Derivative” Transfusion Reactions, developed by Dr. Akash Gupta

Case 1

A 57-year-old female presents to the ER with worsening fatigue. She was recently admitted for resection of a retroperitoneal mass and discharged home 12 days ago. During that admission she received 2 RBC units. Current CBC shows a hemoglobin of 72 g/L. Upon discharge, her hemoglobin was 87 g/L.

Upon examination it is noticed that she has yellow discolouration of her sclera and further history identifies darkening of her urine since being at home.

1. What additional information would you request?
 - a) Blood group and antibody screen
 - b) Markers of hemolysis (LDH, haptoglobin, bilirubin)
 - c) Direct antiglobulin test
 - d) All of the above

2. What is the most likely etiology of her findings?
 - a) Acute hemolytic transfusion reaction
 - b) Delayed hemolytic transfusion reaction
 - c) Warm autoimmune hemolytic anemia
 - d) Cold autoimmune hemolytic anemia

Case 2

You are attending in the critical care unit of at a community hospital and have sought advice from a neurologist at an academic hospital regarding a patient who has presented with progressive flaccid paralysis following a viral infection. The patient is awake and clinically stable but is now completely paralyzed, ventilator-dependent, and only able to communicate through blinking. The neurologist suspects Guillain-Barre Syndrome and recommends a course of high-dose IVIG (2 g/kg administered over 2 days).

3. Who should consent be sought from in this case?
 - a. Consent not required in this situation
 - b. The patient
 - c. The patient's next of kin
 - d. The public guardian

Have one resident read out the following consent discussion:

Hi, I am the physician on call and I would like to talk about a possible treatment plan regarding your disease. The neurologist has recommend we treat you with intravenous immune globulin. With this treatment, we should hopefully be seeing improvement in your clinical status within a few days.



The risks of IVIG treatment include headache, fatigue, nausea, chills, back pain, pain, vomiting, pyrexia, cough, diarrhea, and stomach discomfort. Very rarely, transfusion-related acute lung injury, anaphylaxis, and thromboembolic reactions such as myocardial infarction, stroke, pulmonary embolism, and deep vein thromboses have occurred.

The other effective alternative therapy for treatment of your condition is plasma exchange, however we do not have the facilities at this hospital to offer that service.

If you are okay with this plan, I've already placed the order and we are ready to start the infusion right now.

4. Which of the following risks should be disclosed?
 - a. Acute renal failure
 - b. Anaphylaxis
 - c. Hemolysis
 - d. Thrombosis

Case 3

An 80 year-old woman presents to her local ER with hemopericardium 3 days following insertion of a pacemaker for sick sinus syndrome. Physical examination reveals a heart rate of 130 BPM, blood pressure of 90/50 mmHg with a 15 mmHg pulsus paradoxus, quiet heart sounds and distended neck veins. Laboratory investigations reveal a Hgb of 100 g/L, a WBC of $9 \times 10^9/L$ and a platelet count of $90 \times 10^9/L$. Her INR is elevated at 2.9, aPTT and fibrinogen are normal at 40 seconds and 3.0 g/L, respectively, and the patient's family informs you she is on long-term warfarin. A bedside echocardiogram reveals a large pericardial effusion with signs of tamponade.

ICU is consulted and, after consulting with their staff, the fellow proposes that a pericardiocentesis be performed by cardiology – but only after the patient's anticoagulation has been reversed. The emergency medicine physician then consults with hematology on the available options to achieve this, and is told that the fastest option is prothrombin complex concentrate (PCC). The ER physician writes an order for 2000 units, to be administered by nursing via mini-bag infusion.

5. Which of the following individuals is responsible for obtaining informed consent for PCC?
 - a. The ICU fellow
 - b. The hematologist
 - c. The ER physician
 - d. The ER nurse
6. Which of the following should not be offered as an alternative to PCC infusion to this patient?
 - e. Plasma
 - f. IV vitamin K
 - g. Platelets
 - h. Pericardiocentesis while fully anticoagulated



Case 4

A 30 year-old woman, referred for elective thoracolumbar spinal fusion with instrumentation and bone grafting for severe scoliosis, is noted on the day before surgery to have a hemoglobin of 80 g/L and an MCV of 60 fL. She reports a history of chronic anemia and menorrhagia but is otherwise well and is keen to have the surgery performed as soon as possible. The attending surgeon anticipates that there will be significant bleeding during the procedure and, given the patient's current hemoglobin is fairly certain that transfusion support will be required. In fact, he suggests that 2 units of RBCs be transfused before even taking the patient to the OR, but defers to your opinion as the anesthetist regarding the best course of action.

7. Which of the following is the greatest long-term risk posed to this patient from a red blood cell transfusion?
 - a. Chronic hepatitis B
 - b. Iron overload
 - c. Pregnancy complications
 - d. Transplant complications

8. Which of the following is the best course of action in this situation?
 - a. Administer IV iron and erythropoietin today for tomorrow's surgery
 - b. Postpone the surgery and refer for anemia management
 - c. Maximize blood sparing interventions intra-operatively, including systemic tranexamic acid and careful use of electrocautery
 - d. Seek consent from the patient to transfuse 2 units of RBCs prior to taking her to the OR

Case 5.

You are asked to assess a 16 year-old boy for a lung transplant for bleomycin-induced lung toxicity. The patient demonstrates an understanding of the procedure but reports that he has recently become a Jehovah's Witness and therefore does not wish to be transfused. His parents, realizing that refusal of transfusion support may delay his eligibility for surgery, wish to over-rule his wishes on the argument that he has not reached the age of majority and therefore cannot fully understand the implications of his decisions. They also recall being told that he requires "special blood" due to his history of Hodgkin's disease, but are unsure exactly what that refers to.

9. In adjudicating between the conflicting wishes of the patient and his family, which of the following is the best course of action?
 - a. Ask the Jehovah's Witness hospital liaison and Hospital legal affairs to meet with the patient and his family in order to achieve consensus
 - b. Defer surgery until the patient is 18 years of age
 - c. Respect the parent's wishes, even if that means waiting until the patient is under anesthesia before transfusing
 - d. Respect the patient's wishes, even if that means cancelling the surgery



10. Which of the following special blood does this patient require?
- a. CMV-negative
 - b. HLA-matched
 - c. HPA-matched
 - d. Irradiated
11. If this patient didn't have a history of Hodgkin's lymphoma, and instead required a lung transplant due to complications of an HIV infection, would that change your recommendation regarding the type of special blood they require?
- e. Yes
 - f. No

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